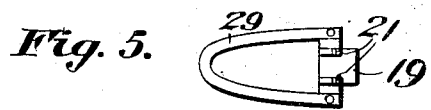
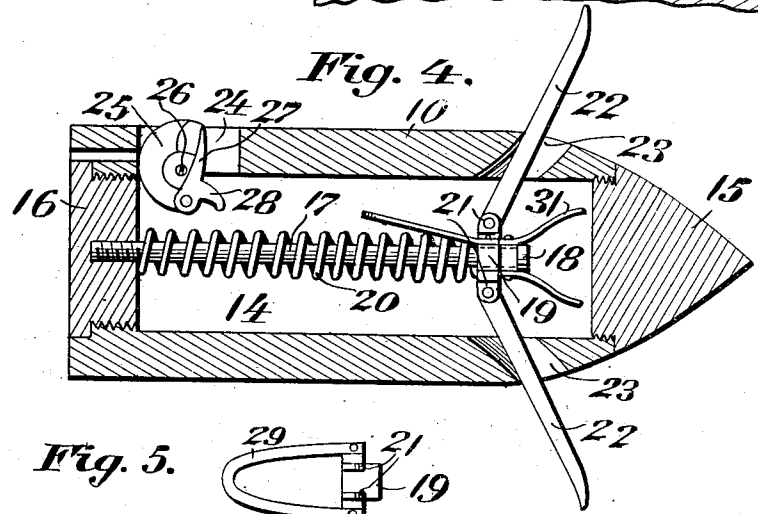
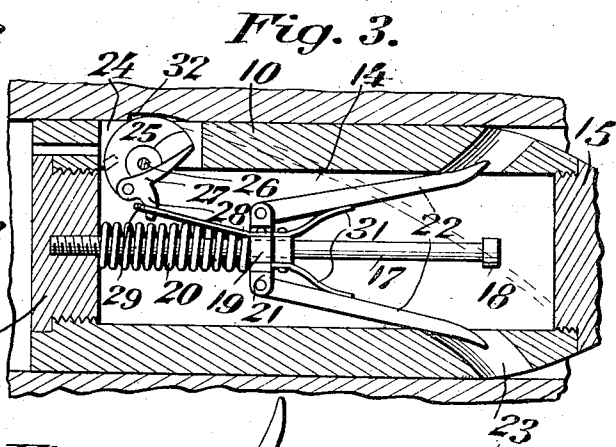
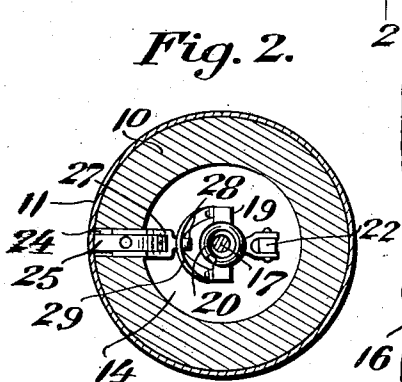
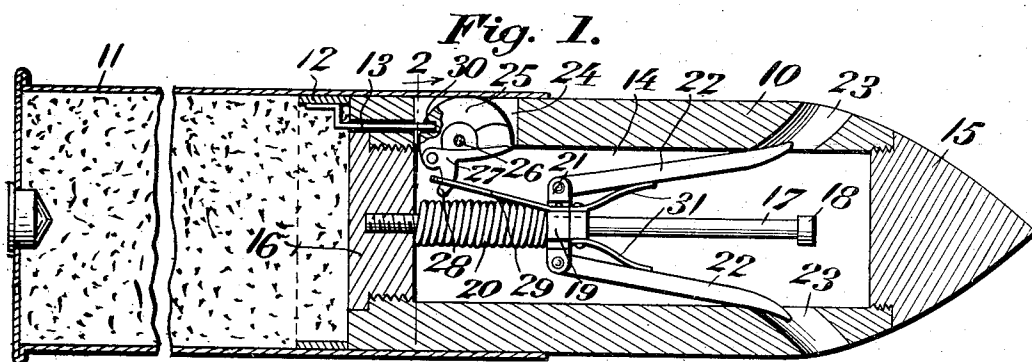


1,222,142.

Patented Apr. 10, 1917.



WITNESSES

*M. D. Gannett*  
*A. H. Kingworth*

INVENTOR

*Marcianus F. Rossi*

BY

*Richard Owen*

ATTORNEY

# UNITED STATES PATENT OFFICE.

MARCIANUS F. ROSSI, OF SAN JOSE, CALIFORNIA.

## PROJECTILE.

1,222,142.

Specification of Letters Patent.

Patented Apr. 10, 1917.

Application filed April 7, 1916. Serial No. 89,642.

*To all whom it may concern:*

Be it known that I, MARCIANUS F. ROSSI, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

This invention relates to a projectile for ordnance purposes and has for its object to provide a hollow projectile in which is mounted a movable device that includes a plurality of cutters adapted to be forced out of a projectile after the latter has been discharged from the gun and which serve the purpose of cutting through and destroying wire entanglements that are erected at the present time in advance of an attacking army to prevent surprises and sudden attack by the enemy.

The primary feature of the device comprises a longitudinally moving member to which are pivoted a plurality of knives or cutters, said member being retained in a retracted position until after discharged from the gun by a trip device which holds a spring, that forces the member forwardly and the knives outwardly, under tension.

Another object of the invention is to so arrange the trip device that it will engage one of the rifling grooves in the gun for the purpose of imparting proper rotary movement to the projectile.

A further object of the invention is to provide means carried by the cartridge case for locking the trip mechanism against premature disengagement and preventing the same from pressing upon the interior of the cartridge shell which overlies said trip device.

Other features of the invention of more or less minor character will be set forth in the following description and illustrated in the accompanying drawings, in which:—

Figure 1 is a longitudinal sectional view through the projectile and loaded cartridge shell ready to be inserted in the bore of a gun.

Fig. 2 is a cross-sectional view of the same on a line 2—2.

Fig. 3 is a sectional view of the projectile similar to that shown in Fig. 1 after the gun has been fired and before the projectile has left the bore of the gun, the trip device being shown in one of the rifling grooves.

Fig. 4 is a longitudinal sectional view of the projectile after it has left the bore of the

gun, showing the cutters or knives projected in operative position, and

Fig. 5 is a view of a detail of the invention.

Referring to the drawing by numerals, 10 indicates the improved projectile and 11 indicates a loaded cartridge shell similar to such as are now used, but containing within the mouth thereof and a short distance back therefrom, an annular band 12 fixed therein to which is attached the forwardly projecting finger 13, the use of which will be described later.

The projectile 10 has a central longitudinal chamber 14 therein which in the present instance is closed at its forward end by a head 15 and a base plug 16, both of which are screwed into place. Screwed into the base 16 is a stem 17 that projects in a forward direction through the chamber 14 in the axis of the same and is provided with a head 18 on its forward end near the cap 15. Slidable on the stem 17 is a collar 19 between which and the base block 16, is arranged a strong spiral spring 20 surrounding the stem 17. Projecting outwardly from the collar 19 in diametrically opposite directions, are ears 21, there being two ears on each side between which is pivoted one end of a knife or cutter 22. Two knives only are shown in the drawings, but the number may be increased as desired, and three or four or more knives may be employed if found convenient and more serviceable.

The forward ends of the knives 22 are free and before discharge, these ends lie against the inner wall of the chamber 14, being slightly curved at the ends to project a short distance into openings 23 formed through the wall of the projectile to permit the knives or cutters when the projectile is discharged to pass outwardly into the position shown in Fig. 4. In order that the knives may be certain to pass outward, a spring 31 may be fastened to the collar 19 and bear upon the inner edge of each knife. The openings 23 are at the forward end of the projectile as shown, and inclined to the axis thereof at such an angle as will permit the ready projection therethrough of the knives or cutters.

Through the side of the projectile 10 at the base thereof, is an opening 24 communicating with the chamber 14 therein and in this opening is placed a semicircular plate 25 eccentrically pivoted on the pin 26 seated

in the wall of the projectile. Hinged on the bottom of the plate 25 at the rear thereof is a trigger 27 having a depending finger 28 over which is engaged a yoke 29 projecting rearwardly from the collar 19 when the latter is retracted to its fullest extent. The semi-circular edge of the plate 25 faces the exterior of the projectile and is tangential to its outer surface when the trip mechanism is set, being locked in such position, to take the strain produced by the tension of the spring 20 from the trip mechanism, by the finger 13 heretofore described. This finger projects forwardly through an opening in the base of the projectile and into a notch 30 formed in the semi-circular plate 25. The inner edge of plate 25 is more or less flattened and forms a bearing face for the trigger 27 when the finger 28 thereon is engaged by the yoke 29.

When the projectile is loaded in the cartridge shell, the collar 19 will be retracted to its fullest extent, thereby placing the spring 20 under its greatest tension and causing the yoke 29 to engage with the finger 28 on the trigger 27. Reactive force of the spring 20 tends to push the collar 19 forward and through the yoke 29 rock the circular plate 25, but this is prevented by engagement of the finger 13 in the notch 30 in said plate. This finger it will be seen not only prevents disengagement of the trip mechanism, but also keeps the semi-circular surface of the plate 28, through the eccentric pivoting of said plate from bearing upon the inner surface of the cartridge shell. After the loaded projectile has been placed in a gun and discharged, the projectile, traveling through the gun will first pass from the cartridge case, whereupon the plate 25 becomes disengaged from the finger 13 and under the force of the spring 20, said plate 25 will turn on its pivot until its outer edge is brought into contact with the bore of the gun. Continued forward movement of the projectile through the gun will cause the plate 25 to engage one of the rifling grooves 32 therein and set up a rotation of the projectile about its own axis. This movement of the plate 25 and trigger 27 of the trip mechanism not being sufficient to disengage the yoke 29, the knives 22 will remain within the projectile. After the projectile leaves the bore of the gun, the plate 25 is free to complete its rotation and permit the yoke 29 to disengage itself from the trigger 27, whereupon the spring 20 quickly forces the collar 19 with the knives 22 in a forward direction until stopped by the head 18, the knives being caused by this movement and the springs 31 to pass through the openings 23 near the head of the projectile and caused to stand outwardly therefrom at an angle, being braced by the rear walls of the openings as shown in Fig. 4. The knives which are made of hard metal and

sharpened, have both a forward movement with the projectile and a rotary movement about the axis of the same. They will therefore cut through all wire entanglements that intervene in its path for a very great distance and when a sufficient number of such projectiles have been discharged, these entanglements are practically rendered useless.

While I have shown and described the best form of device now known to me, it is to be understood that various changes may be made in the construction and arrangement of the several parts without departing from the spirit of this invention. It is also to be understood that this projectile may be used for the destruction of aeroplanes, buildings and other objects.

I claim:

1. A hollow projectile having arms therein adapted to be projected through openings in the sides of the same, and means pivotally mounted within the projectile and rotatable through a slot in the side thereof for holding said arms within the projectile until after the discharge of the latter from a gun, and further by engaging a rifling groove to rotate the projectile while passing through the gun.

2. A hollow projectile, and cutting arms therein, movable longitudinally thereof to cause their extension through the side wall of the projectile, resilient means for forcing said arms forward, a trip mechanism in the projectile for holding the arms retracted, a cartridge shell, and means therein for locking the trip mechanism in operative position.

3. A hollow projectile and a cartridge shell therefor, in combination with a plurality of cutting arms within the projectile and adapted to be projected through the side walls thereof, a longitudinally movable member within the projectile to which said cutters are pivoted, means tending to force said member forwardly, and a tripping means in the projectile held in locked position by the cartridge shell to hold the arms retracted.

4. A hollow projectile containing a longitudinally movable member and cutter arms pivoted thereto adapted to be withdrawn into the shell or extended through openings in the wall thereof, resilient means for moving said member into position to project said cutters, and tripping means including an eccentrically pivoted plate within a slot in the side of the projectile and adapted to hold the arms retracted when said projectile is loaded into a cartridge case.

5. In a projectile having a chamber therein, and a cartridge case for said projectile, an axially disposed stem within said chamber, a collar slidable on said stem, cutter arms pivoted to said collar and adapted to

be projected through openings in the side of the projectile, a spring tending to force said collar into position to extend said arms, a trip device adapted to bear against said cartridge case for holding the collar retracted and the cutter arms within the projectile, and a fixed pin within the cartridge case projecting through the base of the projectile to lock the trip device immovable and out of contact with the cartridge case.

6. In a projectile having a central chamber therein, and a cartridge case for the projectile, a collar movable within said chamber, cutter arms pivoted to said collar, a spring tending to hold said collar at one end of the chamber and the arms projected through openings in the side of the projectile, a yoke on said collar, a trip device including a disk-like plate eccentrically pivoted within a slot in the side of the projectile, and a trigger pivoted on said plate for en-

gaging said yoke and holding the spring under tension and the cutter arms within the projectile, a band within said cartridge case, and a pin fixed on said band and extending into the projectile to engage said plate and lock the trip device immovable.

7. A hollow projectile having cutters movable longitudinally therein and adapted to be projected through openings in the wall thereof, resilient means for projecting said cutters, trip mechanism for holding said cutters within the projectile, and means projecting through the base of the projectile for locking said trip device immovable.

In testimony whereof I affix my signature in presence of two witnesses.

MARCIANUS F. ROSSI.

Witnesses:

W. EDWIN DREW,  
R. F. ROBERTSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."